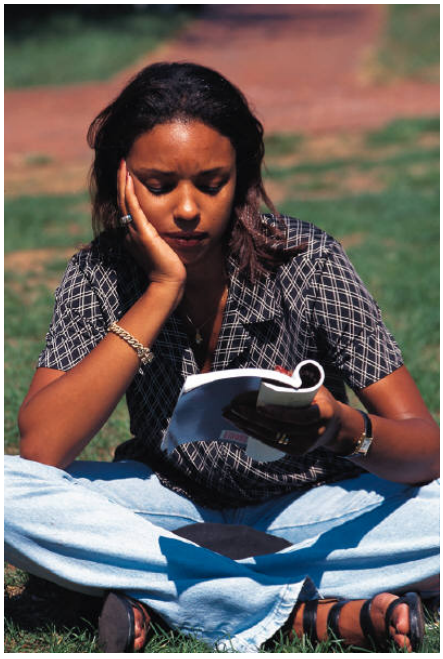
USDA United States Department of Agriculture
Food and Nutrition Service

TEAM NUTRITION

NUTRITION INTEGRATION

Nutrition lessons for grades 9-12 paired with core subjects

A project funded by USDA Team Nutrition in cooperation with
SD Child & Adult Nutrition Services and South Dakota State University



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Knowing facts about nutrition and physical fitness and following positive eating and activity practices is important to the health of today's young adults. Even though they may achieve well in school, if they eat poorly or skip physical activity, they may soon suffer the consequences of obesity, hypertension, diabetes, heart disease, and other ailments.

The lessons on nutrition that follow are developed to meet the needs and interests of teenagers and their academic teachers. They address several academic content standards with a strong focus on nutrition information so that teachers can use these to meet two goals.

Research tells us that if students get the message about positive health practices in many places, in many ways, and from many voices, these messages are more likely to have an impact on their behavior. As their science, math, social studies, language arts, art, and computer teachers, you may be among those influential voices.

Creating a partnership for teaching this curriculum with a family and consumer sciences or health teacher, who is using the Nutrition Expeditions curriculum, will also enhance your effectiveness, but is not a requirement.

Create a teaching partnership in schools to give teens the knowledge and skills they need to live a long and healthy life.

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To contact us:

Child & Adult Nutrition Services
800 Governors Drive
Pierre, SD 57501-2294

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About the Lessons

In response to the Federal Wellness Policy mandate and local school needs, schools are integrating inter-disciplinary thematic units and whole-school wellness events into their curricula. This set of lessons will help to fill the need for resources for academic teachers who are encouraged to participate in nutrition education along with health/PE and family & consumer sciences educators. A whole team of concerned teachers can work to have increased impact with their students.

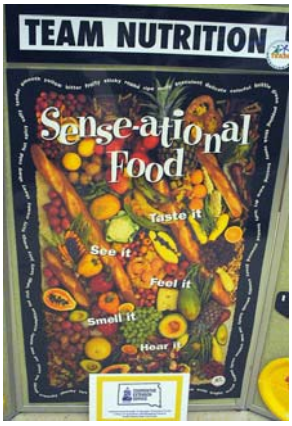
The *Nutrition Integration* is meant to:

- **Combine nutrition education with strong academic concepts.**
- **Create a questioning, problem-solving atmosphere around the topic of nutrition.**
- **Engage higher-order thinking skills like synthesis, analysis, and evaluation.**

Learning goals for this curriculum include:

- **Students will improve their ability to discuss ideas and issues with others.**
- **Students will improve their ability to ask questions and pursue them.**
- **Students will develop the ability to problem-solve on their own (identify, clarify, frame, and solve messy, realistic problems).**
- **Students will learn the different points of view on this subject (gain insight into expert perspectives and develop their own).**
- **Students will develop the ability to consider the human dimension and implications of the subject.**
- **Students will develop empathy for and openness to new ways of seeing.**

Materials for nutrition education and integrated lessons are available to member schools from USDA Team Nutrition.



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Lessons List

Lessons in academic subjects match with appropriate lessons from the Nutrition Expeditions curriculum, which provides background nutrition information. The Nutrition Expeditions lesson may be taught by the academic teacher or a family & consumer sciences or health teacher. There are lessons for most high school subjects so no one needs to be left out of the inter-disciplinary experience.

A US Culinary History

Discover the food culture from the time of colonial Williamsburg and then explore the effect of immigration on American cuisine today. Activities include summarizing what is read, group discussion, and writing from a perspective. Two 50 minute class periods

- Meets History, Communication, Reading, and Technology standards.

Lights...Action...Camera

The right of free speech will be practiced when students create a public service announcement addressing current national or state nutrition and health concerns. Researching, writing, storyboarding, videotaping, editing, and advertising are part of this project. Technology is integrated at all stages as is teamwork. Three to six 50 minute lessons

- Meets Communication Arts, Civics, and Technology standards

Nutri-novel

Students will analyze the novel, My Antonia by Willa Cather, for references to food and its consumption. They will predict the health of three households in the novel based on their typical diet. As a class they will discuss the significance of the food in the novel and in their own lives. Two 50 minute class periods

- Meets Reading, Communication, and Technology standards.

Finding Phytochemicals

Students will review their personal eating patterns for the presence of phytochemicals. Following research on oxidation and the role of antioxidants in the body they will create models of the chemical reactions. They will then summarize by creating a Web page for teens sharing the best oxidation models and encouraging the consumption of phytochemicals in food. Two to three 50 minute lessons

- Meets Science and Technology standards

Look Mom, I'm Published

Students will become editors of an informational publication on nutrition designed for teenaged readers using the U. S. Department of Agriculture or U. S. Department of Health and Human Services literature. As they study the layout and design of newsletters or informational brochures, they will review and adapt accurate, interesting, and appropriate articles on nutrition and health. Three to four 50 minute lessons

- Meets Reading, Communication, and Technology standards

Food Processing—Then and Now

Students will analyze a timeline of food processing innovations. They will research and present information on the development of technology for processing certain foods. They will draw conclusions about the positive and negative effects of the innovations on our nation's health and on the economy. Two 50 minute class periods

- Meets History, Reading, Communication, Technology, Science Standards

NUTRITION INTEGRATION

Nutrition lessons for grades 9-12 paired with core subjects.

A US Culinary History

A lesson on nutrition linked to history, communication, reading, and technology.

Overview:

Discover the food culture from the time of colonial Williamsburg and then explore the effect of immigration on American cuisine today. Activities include summarizing what is read, group discussion, and writing from a perspective. Two 50 minute class periods

Content Standards: Indicators

1. **Reading 1: Apply various reading strategies to comprehend and interpret text.**
2. **Writing 4: Write across content areas to clarify and enhance understanding of information.**
3. **Speaking 2: Use appropriate language and presentation style for formal and informal situations.**
4. **US History 2: Evaluate the influence/impact of various cultures, philosophies, and religions on the development of the U.S.**
5. **Technology Information and Communication Tools 1: Recognize and demonstrate skills in operating technological systems.**
6. **Technology Information and Communication Tools 2: Use technology to enhance learning, extend capability, and promote creativity.**
7. **Technology Information Literacy and Decision Making 1: Use technology to locate and acquire information.**
8. **Technology Information Literacy and Decision Making 2: Determine the reliability and relevancy of information.**

Lesson Objectives:

- **Analyze reasons for food selections based on culture, circumstance, and past experience.**
- **Predict the effect of world travel and immigration on the common foods eaten in a country and other cultural practices.**
- **Writing option: Write creatively from a perspective.**
- **Technology option: Use technology to research, design, and share a unique creation.**

Supplies needed:

Computers or print version of colonial food references
Advanced organizer for each student
Computers or print source on foods from other countries
LCD projector
Bulletin board

Activity:

1. Using the *Eat Like a Colonial* organizer instruct students to write what they envision as a typical day's menu from the time of the American Revolution. *What time of day was each meal consumed? Who prepared the meal? Were the meals healthful?* Ask a few students to share their ideas.

2. Divide students into three groups. Each group receives a different historical reference as a print document or website to review.
   These are available at www.digitalhistory.uh.edu/historyonline/food.cfm (Food in America), www.history.org/Foundation/journal/Autumn04/food.cfm (Colonial Foodways), and www.foodtimeline.org/foodcolonial.html (Scroll down to *breakfast, lunch, and dinner*.)

3. Tell students to change their graphic organizer to reflect what they learned from the reading. As a large group ask students to share what they changed to make their menus more accurate. Discuss with them and have them record.
   **Why certain foods were available?*
   **What these foods contributed to the diet at that time?*
   **What countries and cultures influenced the foods and eating habits of early America?*
   **What countries and cultures are influencing the foods and eating habits of Americans today?*

4. Define *cuisine (the style or manner of preparing food*). Project the website *Smithsonian Key Ingredients* at www.keyingredients.org/001_timeline/001_timeline_01.asp. The *Time Periods* link shows examples of cultures blending foods.

5. Distribute the *Checklist for Recipe Creation* to students. Pair students and instruct the teams to choose two countries which will experience common emigration. They should conduct a brief search of typical foods and dishes from each country. Sources could include *Sally's Place* www.sallysplace.com/food/ethnic_cusine/ethnic_cusine.htm), *About.com* (www.about.com/food/) and *Wikipedia* http://en.wikipedia.org/wiki/Cuisine). Encourage students to validate their information by using more than one site and checking the references. Students should then discuss the effects of the new foods that may be introduced from each country on the cuisine. They will determine what

new dishes might result and predict contribution of their new dish to a healthy diet. Use http://MyPyramid.gov as a reference for what a healthy diet should include.

6. Have groups share two recipes for new combinations of foods from both countries. They should describe the ingredients, methods of preparation, and health benefits. Finally they should include ideas on ways to experience new foods in their lives. They should create these as PowerPoint slides or other graphic to be posted to a bulletin board. You can ask other classes to vote on the favorite, healthiest, or most creative new recipe.

7. **Language arts** students might follow up by writing a diary of a cook at a plantation or governor's palace or a hunter or farmer raising food in the colonies.

8. **Computer / technology teachers** could be included to help students create the recipe multimedia show by adding graphic components, drawing features, Flash animations or to add the show to a school webpage.

Assessment:

Analysis evidenced in the menu revision and class discussion.

Prediction of influence from each country and effects on health evidenced in the creation of the new recipes.

Cooperation and contribution in group.

Creative and mechanically accurate writing of the diary.

Skills in preparing the multimedia presentation.

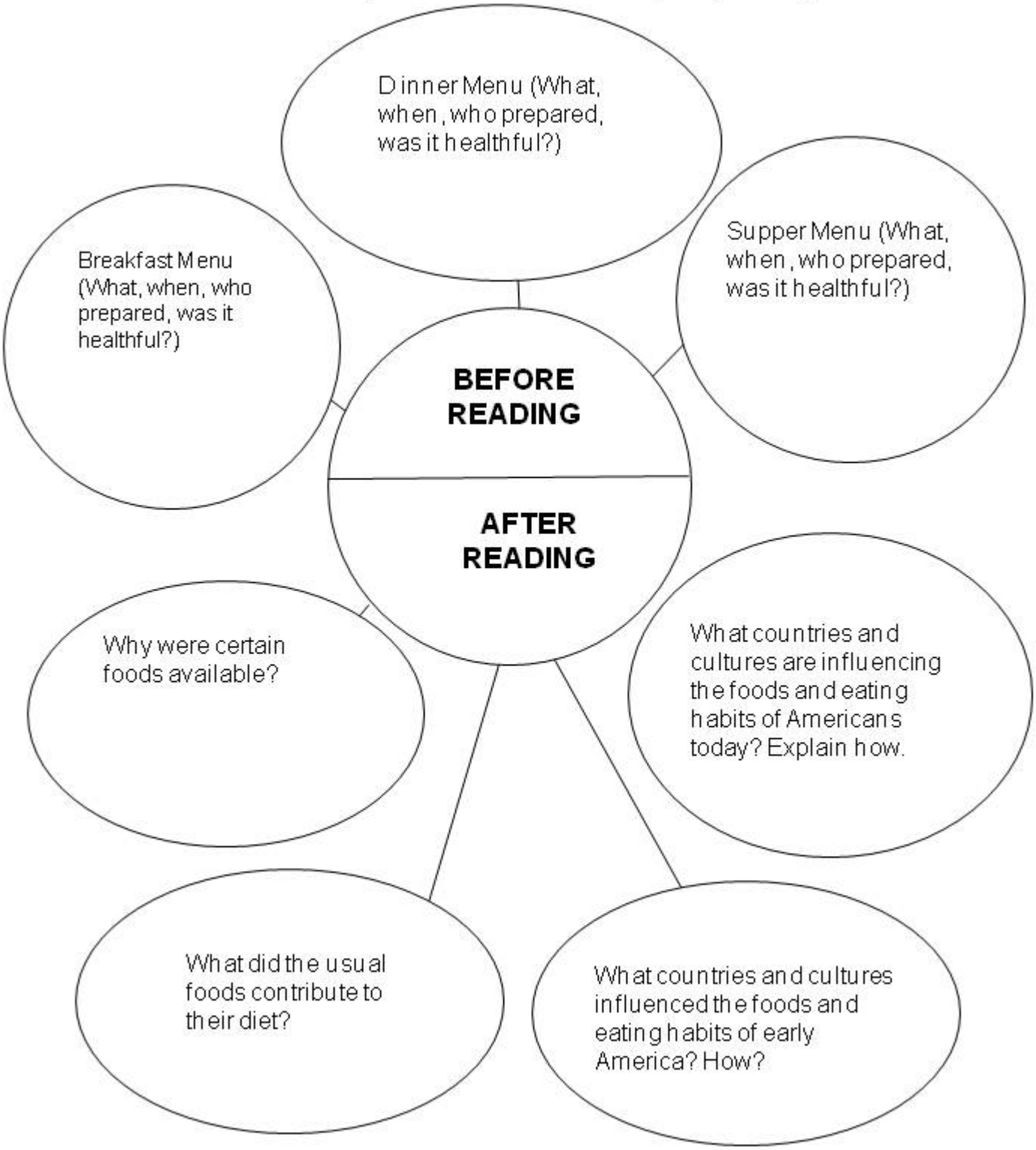
References:

Bernstein. S. (2007). Focus on ethnic cuisine. Sally's Place Web site: www.sallys-place.com/food/ethnic_cusine/ethnic_cusine.htm
Crews, E. (2004). Colonial Williamsburg Journal, autumn. The Colonial Williamsburg Foundation Web site: www.history.org/Foundation/journal/Autumn04/food.cfm
Mintz.S. (2003). Food in America. (Online textbook). Digital History Web site: www.digitalhistory.uh.edu/historyonline/food.cfm
Olver, L. (2000). Colonial & early American fare. The Food Timeline Web site: www.foodtimeline.org/foodcolonial.html
Smithsonian Institution. (2003). 500 years of American food. Smithsonian Key Ingredients: America by Food Web site: www.keyingredients.org/001_timeline/001_timeline_01.asp
United States Department of Agriculture. (n.d.) MyPyramid food guidance system. Center for Nutrition Policy and Promotion Web site: http://MyPyramid.gov

Prepared with funding from USDA Team Nutrition.

EAT LIKE A COLONIAL

Cuisine—the style or manner of preparing food



CHECKLIST FOR RECIPE CREATION

_____1. Find a partner and chose two countries that are from different areas of the world.

_____2. Conduct research on the typical foods and cuisine of each country. Check for credibility.

_____3. Create two new recipes by blending the food and cooking techniques for both countries.

_____4. Predict the health benefits or risks of the new dishes.

_____5. Create PowerPoint slides to share the recipes effectively with the class.

_____5. On the slide, describe ways that you and your classmates can explore new foods.

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Lights...Camera...Action

A lesson on nutrition linked to technology, communication arts, and civics.

Overview:
The right of free speech will be practiced when students create a public service announcement addressing current national or state nutrition and health concerns. Researching, writing, storyboarding, videotaping, editing, and advertising are part of this project. Technology is integrated at all stages as is teamwork. Three to six 50 minute lessons

Lesson Objectives:

1. **Synthesize news on national health trends into a list of top national or local concerns.**
2. **Analyze current public service announcements for purpose, techniques, messages, and styles.**
3. **Plan and execute the making of a video or radio PSA on a nutrition issue.**
4. **Present video or radio clips for review by adults and peers in their school.**
5. **Analyze personal contributions and learning in a journal.**
6. **Technology option: Use skills in audio or video recording and editing to create public service announcements.**

Content Standards: Indicators

- **Civics 2: Analyze the constitutional rights and responsibilities of United States citizens.**
- **Writing 2: Use various strategies and techniques to improve writing quality.**
- **Listening and Viewing 2: Use strategies to retrieve, interpret, and evaluate ideas/information from various oral/visual sources.**
- **Speaking 2: Use appropriate language and presentation style for formal and informal situations.**
- **Technology Nature, Concepts and Systems 3: Analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.**
- **Technology Information and Communication Tools 1: Recognize and demonstrate skills in operating technological systems.**
- **Technology Information and Communication Tools 2: Use technology to enhance learning, extend capability, and promote creativity.**
- **Technology Information and Communication Tools 3: Evaluate and select information tools based on the appropriateness to specific tasks.**
- **Optional: Civics 1: Analyze forms and purposes of government in relationship to the needs of citizens and societies including the impact of historical events, ideals, and documents.**

Supplies needed:
Computer and Internet access for each team
Sample PSAs online
Inspiration software, if available
Sample storyboard and template
Camcorders, audio recorders, microphones and instructional tutorials

Sample rubrics
Activity:

1. Begin by selecting examples of public service announcements (PSA) with a Google search or at the Office of National Drug Control Policy Web site www.mediacampaign.org/mg/television.html. Also include some sample PSAs on nutrition and health from www.fns.usda.gov/fsp/outreach/psas.htm and www.smallstep.gov/

2. Pair students and ask them as you show several examples to rate the public service announcements (PSA) for *memorability, appeal, effect, and purpose.* (See attached scoring chart.) Discuss their opinions of this type of media.

3. Introduce the PSA project to students using the steps that follow:
   *Tell them that they will be making a public service commercial for TV or radio to promote healthy eating behaviors. Form teams of 4 students.
   *Instruct students to keep a digital individual daily journal of all activities as they work on this project by recording important factual information, ideas to share, to do list for self and others, insights gained, anything that he/she is learning. The electronic journal can be in MS Outlook, a blog, or WebCT post depending on the technology that you want to emphasize.
   *Help students to determine possible topics for their PSA. Instruct students to summarize into the journal the food-related health concerns reported in recent national and local publications. (SD School Height and Weight Data: http://doh.sd.gov/SchoolWeight/default.aspx, SD Youth Risk Behavior Survey: http://doe.sd.gov/oess/schoolhealth/yrbs/; US Youth Risk Behavior Survey: www.cdc.gov/mmwr/PDF/SS/SS5505.pdf; SD School Health Profiles: http://doe.sd.gov/oess/schoolhealth/docs/SHP_2004.pdf) Show these via LCD projector or student access on individual computers.
   *Students should continue to write in the journal.

4. **Language arts** students should read background material on advertising techniques and public service announcements. *A Primer on Analyzing TV Commercials* is at www.ccsf.edu/Departments/Transitional_Studies/projects/analyzingtv.pdf. Many textbooks have a reference chapter on radio/TV production.

5. Tell students to brainstorm ideas and generate concept maps on the two or three best ideas for promoting healthful eating. Introduce *Inspiration* software as a technology tool. (A free trial is available at

www.inspiration.com/productinfo/Inspiration/)

6. Teams then need to chose one idea and develop a storyboard. (Examples, flowcharts, and templates are available at www.mcli.dist.maricopa.edu/authoring/studio/guidebook/storyboard_example.html) Encourage teams to keep all members involved and to keep the journal up to date.

7. **Technology option:** Give students lessons on operation and rules for using the digital camcorder, microphone, and/or lights, as well as on using the editing software. Tutorials are available in the equipment use and care books and on industry Web sites. If Flash or Shockwave are available they may be introduced.

8. **Music option:** Arrange for music students to write and perform theme songs or background music for the PSAs.

9. **Government option:** Discuss the right of citizens to be informed and the responsibility to keep themselves informed. Research recent publications on the status of America's health and chart the government agencies responsible for such research and publication.

10. Brainstorm with the whole class to create the scoring rubric. Ask them for suggestions on the criteria that should be included in the scoring rubric both for the production itself and for the team work leading to its completion. An example is on the Read Write Think Web site at www.readwritethink.org/lesson_images/lesson939/psa-rubric.pdf (Download first and then print.) Don't forget to score the learning journal. Lead class members to suggest descriptions for "hit" or "miss" performances and for the weighting for different criteria if desired. Turn the input from the class into a scoring rubric to distribute to the class the next day.

11. Students should then proceed to record video or audio commercials. If cameras are limited, then times must be rationed. (*If students must leave the classroom to access supplies or a different stage setting, make arrangements for permissions, passes, or supervision as needed. Teacher aides or parent volunteers can be helpful in this step.)* Some groups might write, rehearse, or prepare props while others are taping or editing. Recording findings into the journals or additional reading activities can also be fill-ins for students waiting their turn with equipment. Matching time from a technology/computer class with language arts or civics class will make the project proceed faster.*(If access to digital camcorders is*

not an option, then older digital still cameras can be used to make a slide show or tape recorders can be used for radio PSAs. If Flash or Shockwave is available, that software can be powerful. Video is also available from CD or Internet sources. Caution students to cite these sources.)

12. Schedule a preview of rough drafts with peer groups giving suggestions for improvement if time allows.

13. Invite parents, other school staff, other classes, and administrators to attend the final showing of the PSAs. Show them at lunchtime in the cafeteria or hallway, at school events, at nutrition or wellness team meetings, or on the school's Web site and cable channel.

14. Encourage students to share selections from their learning journals with the entire class. Discuss significant insights and results. Have students submit learning journals.

Assessment:

Scoring rubric created with student input on PSA, teamwork, and learning journal. www.readwritethink.org/lesson_images/lesson939/psa-rubric.pdf

References:

Berger, A. (1997). A primer on analyzing TV commercials. San Francisco State University. Broadcast and Electronic Communication Arts Department Web site: *www.ccsf.edu/Departments/Transitional_Studies/projects/analyzingtv.pdf*

Inspiration Software, Inc. www.inspiration.com/productinfo/Inspiration/

International Reading Association/National Council of Teachers of English. Campaign for fair use: public service announcements on copyright awareness. Read Write Think Web site: www.marcopolosearch.org/mpsearch/url_redirect.asp?

International Reading Association/National Council of Teachers of English. Public service announcement rubric. Read Write Think Web site: www.readwritethink.org/lesson_images/lesson939/psa-rubric.pdf

Office of National Drug Control Policy. Ad gallery. National Youth Anti-Drug Media Campaign Web site: www.mediacampaign.org/mg/television.html

SD Department of Education. SD school health profiles Web site: http://doe.sd.gov/oess/schoolhealth/docs/SHP_2004.pdf)

SD Department of Education. SD youth risk behavior survey Web site: http://doe.sd.gov/oess/schoolhealth/yrbs/

SD Department of Health, Office of Health Promotion. School Height and Weight Survey Project. *SD School Height and Weight Report.* http://doh.sd.gov/SchoolWeight/default.aspx

US Department of Agriculture. TV broadcast and in store public service announcement. Food Stamp Program Web site: www.fns.usda.gov/fsp/outreach/psas.htm

US Department of Health and Human Services. Smallstep.gov Web site: www.smallstep.gov/

Youth Risk Behavior Surveillance, United States 2005 Web site: www.cdc.gov/mmwr/PDF/SS/SS5505.pdf

Prepared with funding from USDA Team Nutrition.

How do the ads rate?

Rate the sample public service announcements using the four categories. 5 is high and 1 is low.				
Subject of the advertisement	Memorability 5——1	Appeal 5——1	Effect 5——1	Purpose 5——1

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Nutri-Novel

A lesson on nutrition linked to communication arts, reading, and technology.

Overview:
Students will analyze the novel, My Antonia by Willa Cather, for references to food and its consumption. They will predict the health of three households in the novel based on their typical diet. As a class they will discuss the significance of the food in the novel and in their own lives. Two 50 minute class periods

Lesson Objectives:

1. **Skim a reading selection to search for specific data.**
2. **Analyze a diet to predict the health of individuals.**
3. **Create a presentation or visual display of connections made in the literature.**
4. **Analyze the thought processes that led to their interpretations.**
5. **Technology option: Use technology to create a display.**

Content Standards: Indicators

- **Reading 2: Interpret and respond to diverse works from various cultures and time periods.**
- **Writing 4: Write across content areas to clarify and enhance understanding and information.**
- **Speaking 2: Use appropriate language and presentation style for formal and informal situations.**
- **Technology--Information and Communication Tools 3: Evaluate and select information tools based on the appropriateness to specific tasks.**

Supplies needed:

Novels, literature textbooks, or anthologies
Copies of *Hunting for Food* notes sheet
Computers with *Inspiration* or other concept mapping software

Activity:

1. Ask students:

   **If you had been an early pioneer in this community, what would you have been able to eat?*

   **Do you think you would have been healthy eating those foods? Why or why not?*

   **What foods do you currently eat that come from the land around this community?*

   **What food from today would you miss most if you were not able to get it?*

2. Using the novel, My Antonia by Willa Cather, students should make note of all references to food and its consumption for one of three families—the Burden's, the

Shimerda's, or Pavel and Paul. Instruct pairs of students to take turns reading about one family and recording into the two column chart *Hunting for Food*. As they read they should find references to food or eating and match them with their interpretation of the setting or dietary significance of the food.
Information might include:
**who is involved*
**what is the setting for the food interaction*
**what is the meaning of the food to the participants*
**how might a nutritionist evaluate their food choices*

3. Before students begin working, model for them a method called Think-Alouds from the National Council of Teachers of English Web site (www.readwritethink.org/lessons/lesson_view.asp?id=139). Encourage students to use this method when reading this literature selection.

4. Combine several pairs of students into a literature circle for discussion. In a literature circle, small groups of students should read, discuss, and summarize the significance of food to the message of the novel and the significance of the food to the long term health of the characters. Discussion questions might include:
What did the food reference contribute to the novel?
How does food (lack of food) affect the life and health of the characters?
Where do you see the same significance around the subject of food in your own life? Explain.
If you were to write a story with a message about the "importance of eating the right food", what would it be about?

5. Allow students (individually or in groups) to share their knowledge by selecting one of the following applications or making their own proposal:
Writing option: Turn your message about eating right into a short story or children's book.
Art option: Select a group of healthy recipes using ingredients available in early 19th century Nebraska and create a bulletin board. Use the 2005 Dietary Guidelines (www.health.gov/dietaryguidelines/dga2005/document/html/executivesummary.htm) to determine if your recipe is healthy.
Technology Option: Students could summarize the group findings in a visual to share with the class. They could create an Inspiration concept/mind map, video, Webpage, slide show, etc. (Free trial downloads are available at www.inspiration.com)

6. Note: Other novels that deal with food or health issues may be used.

Assessment:

Notes on food references and interpretations

Writing, visual, or other project work created by teams

Contribution to small group discussion

References:

Inspiration Software, Inc. Web site: www.inspiration.com/productinfo/Inspiration/
International Reading Council, National Council of Teachers of English, & MarcoPolo. Reading comprehension through think-alouds. Read Write Think Web site: *www.readwritethink.org/lessons/lesson_view.asp?id=139*
U.S. Department of Health and Human Services & U.S. Department of Agriculture. Dietary Guidelines for Americans 2005 Web site: www.health.gov/dietaryguidelines/dga2005/document/html/executivesummary.htm

Prepared with funding from USDA Team Nutrition.

HUNTING FOR FOOD

My Antonia by Willa Cather

Partner names_____

Family to search_____

Notes on what the novel says about food or eating, page number	Who is involved? What is the setting for the food interaction? What is the meaning of the food to the participants? How might a nutritionist evaluate their food choices?
*What did the food reference contribute to the novel? *How does food (lack of food) affect the life and health of the characters? *Where do you see the same significance around the subject of food in your own life? Explain. *If you were to write a story with a message about the "importance of eating the right food", what would it be about?	

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Finding Phytochemicals

A lesson on nutrition linked to science and technology.

Overview:
Students will review their personal eating patterns for the presence of phytochemicals. Following research on oxidation and the role of antioxidants in the body they will create models of the chemical reactions. They will then summarize by creating a Web page for teens sharing the best oxidation models and encouraging the consumption of phytochemicals in food. Two-three 50 minute lessons

Lesson Objectives:

1. **Analyze the group of bioactive compounds called phytochemicals.**
2. **Evaluate personal consumption of phytochemicals in food.**
3. **Create models for the process of oxidation and interference with oxidation.**
4. **Create a Web page to educate teens on the importance of phytochemicals in a healthy diet.**

Content Standards: Indicators

- **Physical Science 1: Describe structures and properties of, and changes in, matter.**
- **Life Science 1: Understand the fundamental structures, function, classifications, and mechanisms found in living things.**
- **Science, Technology, Environment, and Society 1: Analyze various implications/effects of scientific advancement within the environment and society.**
- **Technology Information and Communication Tools 2: Use technology to enhance learning, extend capabilities, and promote creativity.**
- **Technology Information Literacy and Decision Making 1: Use technology to locate and acquire information.**

Supplies needed:

Online access to *Phytochemical Connection*
Computers with *Inspiration* or other concept mapping software
Computers with Web design software
Computers with drawing or *PowerPoint* or paper and markers

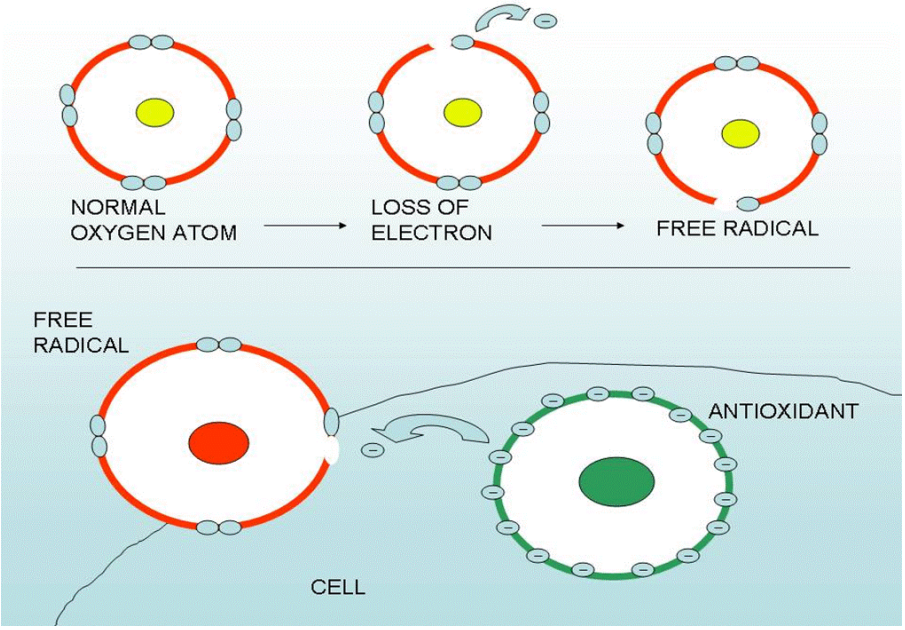
Activity:

1. Prepare a food record of a typical 24 hour period for yourself (or another willing teacher that the students know). A sample and blank form are available at http://nutrition-dietservices.com/foodrcd.pdf. Project the completed chart, with the purpose of the page covered, and ask if students know what it is. Once they correctly answer that it is a food record, and then ask them to guess whose it is. Finally ask them, "How different would your own food record look?"

2. Instruct students to record all food and drink consumed within one 24 hour period on the Food Record Worksheet. (Assure them that there will be no judgment of calories consumed or quality of the diet. Quantities consumed are not needed for the following study.)

3. In pairs have students read the page *Phytochemical Collection* from the Florida State University Web site at http://micro.magnet.fsu.edu/phytochemicals/index.html As they read they should create a timeline either on paper or using Inspiration software. Have pairs share timelines. Help students summarize the characteristics of phytochemicals with a PowerPoint and/or short lecture. (You may find the PBH website FAQs page (www.pbhfoundation.org/pulse/research/pic/faqs.php) and the Extension FactSheet (http://ohioline.osu.edu/hyg-fact/5000/5050.html) very helpful.

4. When the food records are returned, have students write the phytochemicals next to the foods they recorded in their dietary. Helpful information can be found at www.pbhfoundation.org/pulse/research/pic/ and http://en.wikipedia.org/wiki/Phytochemical. Assign students in pairs to read/review in a text or science reference book the concept of chemical oxidation/reduction or present a mini-lecture. Tell them to use food as an example to draw a diagram representing oxidation or antioxidant interference similar to the one created in PowerPoint here.



5. In the same pairs, assign each team a phytochemical on which to create a Web page, poster, or diagram encouraging their peers to consume their phytochemical for health. Encourage students to check their food records to see if they consumed this phytochemical. Teams should give their phytochemical a catchy name, describe the chemical structure briefly, list food sources of the phytochemical, and include their oxidation model. (Science teachers may wish to partner with a **technology or art teacher**.)

6. If Web pages are created, encourage the school **Web site administrator** to link the *Finding Phytochemicals* Web pages to the school lunch page. If posters were created, post them to a prominent bulletin board near the cafeteria.

7. Check with students periodically to see if they are consuming foods containing phytochemicals. A chart for *Finding Phytochemicals* could be posted reminding students to eat the "phytochemical of the day".

Assessment:

Log of food and drink with matching phytochemicals
Timeline of knowledge about phytochemicals
Models of oxidation
Rubric on Web page or poster design
http://school.discovery.com/schrockguide/assess.html

References:

Davidson, M. & Florida State University. Molecular expressions Web site: http://micro.magnet.fsu.edu/phytochemicals/index.html

Desbach, S. H. & Rossi, A. (1998). Phytochemicals—vitamins for the future? Ohio State University Extension Fact Sheet Web site: http://ohioline.osu.edu/hyg-fact/5000/5050.html

Inspiration Software, Inc. www.inspiration.com/productinfo/Inspiration/

Literacy Tech. (2005). Web project rubric Web site: www.literacytech.org/webpub/rubric6.pdf

Produce for Better Health Foundation. (2007). What are phytochemicals? Phytochemical Information Center Web site: www.pbhfoundation.org/pulse/research/pic/

Shrock, K. Kathy Shrock's guide for educators. DiscoverySchool.com Web site: http://school.discovery.com/schrockguide/assess.html

Stein, C. (2007). Daily food record sample. Nutrition & Diet Services Web site: http://nutrition-dietservices.com/foodrcd.pdf

Wikimedia Foundation, Inc. (2007). Wikipedia *Web site:* http://en.wikipedia.org/wiki/Phytochemical

Teacher Reference:

Rossi, A. (1998). Phytochemicals—Vitamins of the Future? Ohio State University Extension Fact Sheet Web site: http://ohioline.osu.edu/hyg-fact/5000/5050.html

Prepared with funding from USDA Team Nutrition

FOOD RECORD—DAY 1

BREAKFAST	TIME OF DAY	PHYTOCHEMICALS	
LUNCH	**TIME OF DAY**	**PHYTOCHEMICALS**	
DINNER	**TIME OF DAY**	**PHYTOCHEMICALS**	
SNACK	**TIME OF DAY**	**PHYTOCHEMICALS**	
WATER			

Nutrition lessons for grades 9-12 paired with core subjects.

Look Mom, I'm Published

A lesson on nutrition linked to reading, communication and technology.

Overview: Students will become editors of an informational publication on nutrition designed for teenaged readers using the U. S. Department of Agriculture or U. S. Department of Health and Human Services literature. As they study the layout and design of newsletters or informational brochures, they will review and adapt accurate, interesting, and appropriate articles on nutrition and health. Three to four 50 minute lessons.

Lesson Objectives:

1. **Review sample publications to identify a list of characteristics that catch a reader's attention and nutrition topics that are in the news.**
2. **Simulate a style of publication with nutrition information chosen and researched by the student.**
3. **Adapt information and graphics by paraphrasing and adjusting writing style to suit a teenaged audience.**
4. **Use publishing software to create a well-designed informational publication on a nutrition topic.**
5. **Participate in a peer review process of the student-made publications.**

Content Standards: Indicators

- **Reading 1: Apply various reading strategies to comprehend and interpret text.**
- **Reading 4: Retrieve, analyze, synthesize, and evaluate a variety of informational texts.**
- **Writing 1: Use appropriate content, organization, form, and style in technical, business, creative, and personal writing.**
- **Writing 2:Use various strategies and techniques to improve writing quality.**
- **Writing 3: Use appropriate mechanics, usage, and conventions of language.**
- **Technology--Information Literacy and Decision Making 1: Students use technology to locate and acquire information.**
- **Technology--Information Literacy and Decision Making 2: Students determine the reliability and relevancy of information.**

Supplies needed:

Sample publications
Computers with Internet
Publishing software (optional)
Posters with labels "strongly agree" and "strongly disagree".

Activity:

1. Mark a continuum on a wall or floor with "strongly agree" posted on one end and "strongly disagree" on the other. Instruct students to line up on the continuum at a place that represents their opinion on topics that you will list. Ask selected students at different points on the line to explain why they placed themselves as they did. Sample questions might include:

**An article from a major newspaper is a good place to get reliable information about new science or social topics.*
**I like to read a colorful three-fold pamphlet to get information.*
**If I had to share information in my organization or workplace, I would choose a one or two page newsletter.*
**A 6-10 page booklet would be the best way to share information.*

2. Divide the class into groups of two or three. Provide print copies of a brochure, news article, newsletter, and booklet on nutrition topics. Examples:
   *Dietary Guidelines booklet
   www.health.gov/dietaryguidelines/dga2005/document/pdf/brochure.pdf
   *Portion Control Fact Sheet
   www.cdc.gov/nccdphp/dnpa/nutrition/nutrition_for_everyone/healthy_weight/portion_size.htm
   *SD Team Nutrition Newsletter http://doe.sd.gov/oess/cans/nutrition/newsletters.asp
   *Current news article www.keloland.com or www.argusleader.com (Search word "nutrition".)

3. Groups should put themselves in the role of school wellness committee members. They should then list on the *Nutrition Notes* worksheet what they see as general characteristics of each style of print document (brochure, news article, newsletter, booklet) and describe a situation when the Wellness Committee might chose to use each one of the styles of publication. Discuss student responses with the whole class.

4. Students should look up information about styles of publications and recommendations for producing good quality productions using their textbook or on-line sources (About.com at http://graphicdesign.about.com/od/?once=true&). Direct them to select a style of publication to create, or you may assign all groups to the same style.

5. Extend the lesson by investigating current nutrition topics that are in the news or provide a list for the students. Assign or have students select a topic. They can brainstorm ideas for their publication on the *Nutrition Notes* worksheet.

6. Discuss paraphrasing and model an example. You could have students practice on a sample. Students should research government sources for information on their topic. Have students paraphrase to make the information interesting to a teen audience. (Government sites will be copyright free; however, they should cite sources. Introduce or review Internet search tips and methods of citation if needed. Some sites to get them started are http://nutrition.gov and www.cdc.gov/nccdphp/dnpa/nutrition/index.htm They could add

graphics from http://foodstamp.nal.usda.gov/foodstamp/photo_gallery.php or www.ars.usda.gov/is/graphics/photos/)

7. A sample writing rubric is available at Read. Write. Think. www.readwritethink.org/lesson_images/lesson401/Rubric.pdf

8. **Technology Option:** Have students use publishing software to create the document. Tutorials are available for most software. Partner with the technology teacher if desired.

9. Students should share their publication with classmates in a peer review process and then rewrite. When rewriting is finished, you may want to create a contest for students not in the class to vote for their favorite publication.

10. Make copies of the publication for distribution at health fairs or parent-teacher conferences or for posting in your school. These could be added to Web pages to link to the school menu page.

Assessment:

Notes on attention-getting characteristics and recent topics

Paraphrasing and adaptation of selected literature

Quality of publication www.readwritethink.org/lesson_images/lesson401/Rubric.pdf

References:

Agricultural Research Service. U.S. Department of Agriculture. Image Gallery Web site: www.ars.usda.gov/is/graphics/photos/

Centers for Disease Control and Prevention. Department of Health and Human Services. Nutrition Topics Web site: www.cdc.gov/nccdphp/dnpa/nutrition/index.htm

International Reading Association/National Council of Teachers of English. *Read, Write, Think*. Writing Rubric. www.readwritethink.org/lesson_images/lesson401/Rubric.pdf

Microsoft Corporation. (2007). Training. Microsoft Office Online Web site: http://office.microsoft.com/en-us/training/default.aspx

National Agricultural Library. U.S. Department of Agriculture. Nutrition.gov Web site: http://nutrition.gov

New York Times Company. (2007). About: graphic design. About.com Web site: http://graphicdesign.about.com/od/?once=true&

U.S. Department of Agriculture. Photo gallery. Food Stamp Nutrition Connection Web site: http://foodstamp.nal.usda.gov/foodstamp/photo_gallery.php

Prepared with funding from USDA Team Nutrition.

Nutrition Notes

Traits I like in the documents I reviewed…

Notes on the type of document I will create…

Nutrition lessons for grades 9-12 paired with core subjects.

Food Processing—Then and Now

A lesson on nutrition linked to history, reading, communication, and science.

Overview: Students will analyze a timeline of food processing innovations. They will research and present information on the development of technology for processing certain foods. They will draw conclusions about the positive and negative effects of the innovations on our nation's health and on the economy. Two-three 50 minute class periods

Lesson Objectives:

1. **Synthesize information from research.**
2. **Present information to others.**
3. **Evaluate the impact of food processing on health, our society, and the economy.**

Content Standards: Indicators

- **Reading 1: Apply various reading strategies to comprehend and interpret text.**
- **Reading 4: Retrieve, analyze, synthesize, and evaluate a variety of informational texts.**
- **Speaking 1: Use appropriate structure and sequence to express ideas and convey information.**
- **Speaking 2: Use appropriate language and presentation style for formal and informal situations.**
- **US History 1: Analyze U.S. historical eras to determine connections and cause/effect relationships in reference to chronology.**
- **Science, Technology, Environment, and Society 1: Analyze various implications/effects of scientific advancement within the environment and society.**
- **Science, Technology, Environment, and Society 2: Analyze the relationships/interactions among science, technology, environment, and society.**
- **Technology Nature, Concepts, and Systems 1: Understand the history and progression of technology in relation to the development and design of future technology.**
- **Technology Information and Communication Tools 1: Recognize and demonstrate skills in operating technological systems.**
- **Technology Information and Communication Tools 3: Evaluate and select information tools based on the appropriateness to specific tasks.**
- **Technology Literacy and Decision Making 1: Use technology to locate and acquire information.**

Supplies needed:

Print advertisements for food products
Computer with Internet access
LCD projector and screen
Presentation scoring rubric

Activity:

1. Show print advertisements from magazines or actual products that portray an assortment of convenience foods or new food items. Convenience foods are any product with one or more of the preparation steps done for the consumer. Have students speculate on the technology that is needed to produce these foods. (Or look over the list of foods at the Web site *Food and Drink at the Pan-American Exposition* at http://ublib.buffalo.edu/libraries/exhibits/panam/food/marvels.html. This would also make an interesting visual for a bulletin board.)

2. Have students download or read online the *Current Health 2* article: "50 Years of Food Innovations: The Hot, the Dry, and the Frozen." [Search through Google or SD State Library services (ProQuest or Infotrac) for: "The Hot, the Dry, and the Frozen" Current Health 2.]

3. As they read, have students list the types of food preparation technology and then one or more food items that they have consumed in the past week that use each of the food preparation technologies described.

4. Talk about several of the food products that students listed and the technological innovations that they represent. Lead a discussion on using foods made with the newest technology. Discussion might include:
   -Have these encouraged us to eat on the run or to sit down with family or friends to eat?
   -Is it easier/harder to eat a breakfast or other meal with this technology?
   -Have these foods and technologies increased or decreased fat intake? Sugar? Other nutrients?
   -How have they affected food preparation time? Food preparation skill needed?
   -Is the safety of the food changed?
   -Is the variety of food available different?
   -Do these cost more or less than less-processed foods?
   -Have these innovations created more or less waste?

4. Instruct students individually or in teams to prepare a brief multimedia show on the history of a food item or the food processing changes implemented by a long-established food company. The media show should include advantages to the development of their food and concerns that might be raised. Good sources of information include:
   The Food Timeline, www.foodtimeline.org/
   Food and Drink at the Pan-American Exposition

http://ublib.buffalo.edu/libraries/exhibits/panam/food/marvels.html
History of Food and Food Products, http://inventors.about.com/od/foodrelatedinventions/
Sci4Kids,www.ars.usda.gov/is/kids/nutrition/nutritionintro.htm
Industry web sites such as Campbell's, General Mills, etc.

5. Share presentations with the class. Score with a brief rubric. (Use one from this Web site or develop your own. International Reading Association/National Council of Teachers of English. (2003). Presentation rubric. Read. Write. Think. Web site: www.readwritethink.org/lesson_images/lesson110/rubric.pdf).

6. **Science option**: Students examine the science behind the innovations.

7. **Communication arts option:** Have students interview an elderly person about changes in food technology that they have experienced over their lifetime. They could report in a variety of ways—written summary, short talk, video, poster, etc.

Assessment:

Read. Write. Think.(2003). *International Reading Association/National Council of Teachers of English.* Presentation Rubric. www.readwritethink.org/lesson_images/lesson110/rubric.pdf\

Assessment of impact of technology on society and economy

Teamwork skills if done in small groups
www.museumca.org/goldrush/curriculum/we_accuse/tgrouprubric.html

Resources:

Food and Drink at the Pan-American Exposition (2004). The Libraries, University of Buffalo Web site: http://ublib.buffalo.edu/libraries/exhibits/panam/food/marvels.html
Hayton, B. (Nov, 1990). 50 Years of Food Innovations: The Hot, the Dry, and the Frozen. *Current Health 2. Vol 17, Iss 3, p. 17-19.* Accessed from ProQuest Library Services.
International Reading Association/National Council of Teachers of English. (2003). Presentation rubric. Read. Write. Think. Web site: www.readwritethink.org/lesson_images/lesson110/rubric.pdf
New York Times Company. (2007). About: Inventors. History of Food and Food Products. About.com Web site: http://inventors.about.com/od/foodrelatedinventions/
Olver, L. (1999). The Food Timeline Web site: www.foodtimeline.org/
Sanderson, M. D. (2005). Teacher rubric for group work. Oakland Museum of California Web site: www.museumca.org/goldrush/curriculum/we_accuse/tgrouprubric.html
U.S. Department of Agriculture. (2007). ARS sci4kids. Agriculture Research Service Web site: www.ars.usda.gov/is/kids/nutrition/nutritionintro.htm
Vandervelde, J. (2007). A+ rubric: PowerPoint rubric. University of Wisconsin-Stout Web site: www.uwstout.edu/soe/profdev/pptrubric.html

Teacher Reference for discussion:

U.S. Department of Agriculture. (April 2004). *Amber Waves (*online journal). Savvy buyers spur food safety innovations in meat processing. Economic Research Service Web site: www.ers.usda.gov/Amberwaves/April04/Features/SavvyBuyers.htm(Many concepts here apply to all food innovations.

Prepared with funding from USDA Team Nutrition.

50 YEARS OF INNOVATION: The HOT, The DRY, and The FROZEN

INNOVATION	EXAMPLES OF FOODS I HAVE EATEN THAT ARE PREPARED WITH THIS TECHNOLOGY

FOR DISCUSSION:
Effects on our society, our economy, and our health…

-Have these encouraged us to eat on the run or to sit down with family or friends to eat?

-Is it easier or harder to eat a breakfast or other meal with this technology?

-Have these foods and technologies increased or decreased fat intake? Sugar? Other nutrients?

-How have they affected food preparation time? Have they affected food preparation skill needed?

-Is the safety of the food changed?

-Is the variety of food available different?

-Do these cost more or less than less-processed foods?

-Have these innovations created more or less waste?